LIST OF CURRENT CLAIMS

1. (Currently Amended) Apparatus for predicting bone fracture risk in an osteoporotic patient, comprising:

a Dual X-ray Absorptiometry scanner configured to scan a body area of the patient to thereby ~~produced~~ produce a Dual X-ray Absorptiometry image of the body part within said body area;

an image analysis module configured to perform shape analysis using an Active Shape Model and to perform texture analysis of the Dual X-ray Absorptiometry image to thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area; and

a data comparison module having a database of comparative data sets from Dual X-ray Absorptiometry images of control subjects, for comparison with the image data set generated from the Dual X-ray Absorptiometry image of the patient, to thereby predict the risk of bone fracture in the patient.

2. (Previously Presented) The apparatus according to claim 1, wherein the body part is a proximal femur.

3. (Previously Presented) The apparatus according to claim 1 configured to analyze different body parts.

4. (Previously Presented) The apparatus according to claim 1 configured to analyze more than one of proximal femur, wrist, ankle, hand, and spine.

5. (Cancelled)

6. (Currently Amended) Apparatus according to claim [[5]] 1, wherein the data comparison module is configured to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from the mean co-ordinates of the comparative data sets.

7. (Previously Presented) Apparatus according to claim 1, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using Fourier transforms and Principal Component Analysis, for generating a texture data set representative of the texture of the body part.

8. (Previously Presented) Apparatus according to claim 7, wherein the Dual X-ray Absorptiometry image is digitised and regions of interest identified in the image, from which a power spectrum is obtained from a Fourier transform of each region of interest, and profiles of each region produced, the Principal Component Analysis generating a data set from each profile, which is to be compared with the database of comparative data sets.

9. (Previously Presented) Apparatus according to claim 1 is configured to compare i) a value obtained from comparison of the image data set for the Dual X-ray Absorptiometry image of the patient or subject with the database of comparative data sets, with ii) bone mineral density data obtained from the Dual X-ray Absorptiometry image.

10. (Currently Amended) An apparatus for measuring the progression of a disorder which affects the shape and/or trabecular structure of bone in a patient, the apparatus comprising:

a Dual X-ray Absorptiometry scanner for scanning a body area of the patient to thereby produce a Dual X-ray Absorptiometry image of a body part within said body area;

an image analysis module configured to perform shape analysis using an Active Shape Model and to perform texture analysis of the Dual X-ray Absorptiometry image to thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area; and

a data comparison module comprising a database of comparative data sets from Dual X-ray Absorptiometry images of control subjects, for comparison with the image data set generated from the Dual X-ray Absorptiometry image of the patient, to thereby provide a measure of the progression of the disorder in the patient.

11. (Previously Presented) The apparatus according to claim 10, wherein the the disorder is osteoarthritis.

12. (Previously Presented) The apparatus according to claim 10, wherein the disorder is Paget's disease.

13. (Previously Presented) The apparatus according to claim 10, wherein the body part is a proximal femur.

14. (Previously Presented) The apparatus according to claim 10 configured to analyze different body parts.

15. (Previously Presented) The apparatus according to claim 10 for analysing more than one of the proximal femur, wrist, ankle, hand and spine.

16. (Cancelled)

17. (Currently Amended) The apparatus according to claim [[16]] 10, wherein the data comparison module is configured to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from the mean co-ordinates of the comparative data sets.

18. (Previously Presented) The Apparatus according to claim 10, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using Fourier transforms and Principal Component Analysis, for generating a texture data set representative of the texture of the body part.

19. (Previously Presented) The apparatus according to claim 18, wherein the Dual X-ray Absorptiometry image is digitized and regions of interest identified in the image, from which a power spectrum is obtained from a Fourier transform of each region of interest, and profiles

of each region produced, the Principal Component Analysis generating a texture data set from each profile, which is to be compared with the database of comparative data sets.

20. (New) The apparatus according to claim 10 configured to compare i) a value obtained from comparison of the image data set for the Dual X-ray Absorptiometry image of the patient or subject with the database of comparative data sets, with ii) bone mineral density data obtained from the Dual X-ray Absorptiometry image.

21. (Currently Amended) An apparatus for predicting a risk of osteoarthritis in a patient, the apparatus comprising:

a Dual X-ray Absorptiometry scanner for scanning a body area of the patient to thereby produce a Dual X-ray Absorptiometry image of a body part within said body area;

an image analysis module configured to perform shape analysis using an Active Shape Model and to perform texture analysis of the Dual X-ray Absorptiometry image to thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area; and

a data comparison module comprising a database of comparative data sets from Dual X-ray Absorptiometry images of control subjects, for comparison with the image data set generated from the Dual X-ray Absorptiometry image of the patient, to thereby predict the risk of osteoarthritis in the patient.

22. (Previously Presented) The apparatus according to claim 21, wherein the body part is a proximal femur.

23. (Previously Presented) The apparatus according to claim 21 configured to analyze different body parts.

24. (Previously Presented) The apparatus according to claim 21 configured to analyze more than one of the proximal femur, wrist, ankle, hand and spine.

25. (Cancelled)

26. (Currently Amended) The apparatus according to claim [[25]] 21, wherein the data comparison module is configured to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in

the database by examining how the location of landmark points deviates from the mean co-ordinates of the comparative data sets.

27. (Previously Presented) The apparatus according to claim 21, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using Fourier transforms and Principal Component Analysis, for generating a texture data set representative of the texture of the body part.

28. (Previously Presented) The apparatus according to claim 27, wherein the Dual X-ray Absorptiometry image is digitized and regions of interest identified in the image, from which a power spectrum is obtained from a Fourier transform of each region of interest, and profiles of each region produced, the Principal Component Analysis generating a texture data set from each profile, which is to be compared with the database of comparative data sets.

29. (Previously Presented) The apparatus according to claim 21 configured to compare i) a value obtained from comparison of the image data set for the Dual X-ray Absorptiometry image of the patient or subject with the database of comparative data sets, with ii) bone mineral density data obtained from the Dual X-ray Absorptiometry image.

30. (Currently Amended) The apparatus for measuring non-pathological changes in a subject associated with age, gender, body mass index and/or genetics, the apparatus comprising:

a Dual X-ray Absorptiometry scanner for scanning a body area of the subject to thereby produce a Dual X-ray Absorptiometry image of a body part within said body area;

an image analysis module configured to perform analysis using an Active Shape Model shape and to perform texture analysis of the Dual X-ray Absorptiometry image to thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area; and

a data comparison module comprising a database of comparative data sets from Dual X-ray Absorptiometry images of control subjects, for comparison with the image data set generated from the Dual X-ray Absorptiometry image of the subject, to thereby provide a measure of said non-pathological changes.

31. (Previously Presented) The apparatus according to claim 30, wherein the body part is a proximal femur.

32. (Previously Presented) The apparatus according to claim 30 configured to analyze different body parts.

33. (Previously Presented) The apparatus according to claim 30 configure to analyze more than one of the proximal femur, wrist, ankle, hand and spine.

34. (Cancelled)

35. (Currently Amended) The apparatus according to claim [[34]] 30, wherein the data comparison module is configured to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from the mean co-ordinates of the comparative data sets.

36. (Previously Presented) The apparatus according to claim 30, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using Fourier transforms and Principal Component Analysis, for generating a texture data set representative of the texture of the body part.

37. (Previously Presented) The apparatus according to claim 36, wherein the Dual X-ray Absorptiometry image is digitized and regions of interest identified in the image, from which a power spectrum is obtained from a Fourier transform of each region of interest, and profiles of each region produced, the Principal Component Analysis generating a texture data set from each profile, which is to be compared with the database of comparative data sets.

38. (Previously Presented) The apparatus according to claim 30 configured to compare i) a value obtained from comparison of the image data set for the Dual X-ray Absorptiometry image of the patient or subject with the database of comparative data sets, with ii) bone mineral density data obtained from the Dual X-ray Absorptiometry image.

39. (Currently Amended) The apparatus for quantifying deformation of a proximal femur of a patient, the apparatus comprising:

a Dual X-ray Absorptiometry scanner for scanning a body area of the patient to thereby produce a Dual X-ray Absorptiometry image of a body part within said body area;

an image analysis module configured to perform shape <u>analysis using an Active Shape Model</u> and <u>to perform</u> texture analysis of the Dual X-ray Absorptiometry image to thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area; and

a data comparison module comprising a database of comparative data sets from Dual X-ray Absorptiometry images of control subjects, for comparison with the image data set generated from the Dual X-ray Absorptiometry image of the patient, to thereby quantify deformation of the proximal femur.

40. (Cancelled)

41. (Currently Amended) The apparatus according to claim [[40]] <u>39</u>, wherein the data comparison module is configured to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from the mean co-ordinates of the comparative data sets.

42. (Previously Presented) The apparatus according to claim 39, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using Fourier transforms and Principal Component Analysis, for generating a texture data set representative of the texture of the body part.

43. (Previously Presented) The apparatus according to claim 42, wherein the Dual X-ray Absorptiometry image is digitized and regions of interest identified in the image, from which a power spectrum is obtained from a Fourier transform of each region of interest, and profiles of each region produced, the Principal Component Analysis generating a texture data set from each profile, which is to be compared with the database of comparative data sets.

44. (Previously Presented) The apparatus according to claim 39 configured to compare i) a value obtained from comparison of the image data set for the Dual X-ray Absorptiometry image of the patient or subject with the database of comparative data sets, with ii) bone mineral density data obtained from the Dual X-ray Absorptiometry image.